What is Claimed Is:

1. A method for intraoperative neurophysiological monitoring with at least one electrical stimulus probe as an intraoperative aid in defining the course of a nerve structure by monitoring electromyographic activity within the nerve structure, comprising:

(a) contacting the nerve structure with the stimulus probe;

(b) detecting a stimulus probe impedance change resulting from said stimulus probe nerve contact;

(c) triggering a sequence of pre-programmed intraoperative neurophysiological monitoring algorithm steps in response to the detection of step (b).

2. The method for intraoperative neurophysiological monitoring of claim 1, wherein step (c) comprises closing a circuit between a current source and the stimulus probe to provide stimulus current to the nerve structure.

3. The method for intraoperative neurophysiological monitoring of claim 1, wherein step (c) comprises:

(c)(1) generating a visible or audible annunciation of appropriate nerve tissue contact impedance.

4. The method for intraoperative neurophysiological monitoring of claim 3, wherein said step (c)(1) comprises:

(c)(2) generating an annunciation signal to illuminate a Light Emitting Diode.

5. The method for intraoperative neurophysiological monitoring of claim 1, wherein step (c) comprises:

(c)(1) initiating generation of a pre-programmed sequence of stimulus pulses; and

(c)(2) storing the measured responses collected from electrodes connected to the enervated muscle structures.

6. The method for intraoperative neurophysiological monitoring of claim 5, further comprising:

(c)(3) analyzing the stored, measured responses collected from electrodes connected to the enervated muscle structures, to determine the average response amplitude.

7. The method for intraoperative neurophysiological monitoring of claim 5, further comprising:

(c)(3) analyzing the stored, measured responses collected from electrodes connected to the enervated muscle structures, to determine the peak-to-peak response amplitude.

8. The method for intraoperative neurophysiological monitoring of claim 5, further comprising:

(c)(3) analyzing the stored, measured responses collected from electrodes connected to the enervated muscle structures, to determine the response threshold.

9. The method for intraoperative neurophysiological monitoring of claim 5, further comprising:

(c)(3) analyzing the stored, measured responses collected from electrodes connected to the enervated muscle structures, to determine the response amplitude as a function of stimulus intensity.

10. A method for intraoperative neurophysiological monitoring, comprising:

(a) placing a first electrode in a muscle enervated by a selected nerve;

(b) placing a second electrode in a muscle not enervated by the selected nerve;

(c) stimulating the selected nerve;

(d) monitoring the effect of said stimulation step as observed from the first electrode and simultaneously monitoring the effect of said stimulation step as observed from the second electrode; and

(e) actuating an audible or visible alarm if the effect of the stimulation is observed on the first electrode but not on the second electrode.

11. The method for intraoperative neurophysiological monitoring of claim 10, further comprising:

(b1) placing a third electrode in a muscle not enervated by the selected nerve; and

(d1) monitoring the effect of said stimulation step as observed from the first electrode and simultaneously monitoring the effect of said stimulation step as observed from the third electrode.

12. A method for detecting and analyzing a neurophysiological signal in the body, comprising the steps of:

(a) defining a first probe sampling window of time having a first selected duration;

(b) defining a second probe sampling window of time having a second selected duration and being delayed with respect to said first probe sampling window of time by a selected inter-probe interval of time;

(c) contacting a nerve structure in the body;

(d) sensing a continuous and time varying electromyographic waveform from the nerve structure;

(e) storing said nerve structure electromyographic waveform in memory;

(f) rectifying said nerve structure electromyographic waveform; and

(g) generating a continuous threshold waveform by processing the rectified nerve structure electromyographic waveform through said first probe sampling window and through said second probe sampling window and subtracting the instantaneous value of the waveform power in said second probe window from the instantaneous value of the waveform power in said first probe window.

13. The method for detecting and analyzing a neurophysiological signal of claim 12, further comprising the steps of:

(h) determining whether said continuous threshold waveform includes a first pulse having a first polarity followed by a second pulse having a second polarity by an interval substantially equal to said selected inter-probe interval; and if so,

(i) generating an annunciation indicating that an artifact has been detected.

14. The method for detecting and analyzing a neurophysiological signal of claim 13, further comprising the steps of:

(j) evaluating the distribution among intelligent and non-intelligent electrodes in response to said annunciation that an artifact has been detected.

15. The method for detecting and analyzing a neurophysiological signal of claim 12, further comprising the steps of:

(h) determining whether said continuous threshold waveform includes a first pulse having a pulse width substantially equal to said selected inter-probe interval followed by an interval having no pulse and being substantially equal to said selected inter-probe interval; and if so,

(i) generating an indication that no artifact has been detected.

16. The method for detecting and analyzing a neurophysiological signal of claim 12, wherein said first probe sampling window first selected duration is equal to said second probe sampling window second selected duration.

17. The method for detecting and analyzing a neurophysiological signal of claim 16, wherein said first probe sampling window first selected duration is in the range of 0.25 seconds to 0.5 seconds.

18. The method for detecting and analyzing a neurophysiological signal of claim 16, where said selected inter-probe interval is approximately one second.

19. A method for controlling a neurophysiological monitoring instrument connected to a stimulus probe and one or more electrodes for monitoring electromyographic activity in nerve and muscle structures in the body, comprising:

(a) connecting a first circuit to the stimulus probe for sensing an electrical parameter that changes in response to touching tissue structures in the body, said first circuit being adapted to generate a stimulus probe sensed signal pulse;

(b) connecting a controller connected to said first circuit for receiving said stimulus probe sensed signal, said controller being adapted to execute an algorithm including a plurality of instrument control commands and a plurality of selected patterns of stimulus probe sensed signal pulses;

(c) placing a stimulus probe in proximity to tissue structures in the body;

(d) sensing said electrical parameter changing in response to touching tissue structures in the body;

(e) generating a pattern of stimulus probe sensed signal pulses similar to one of said selected patterns of stimulus probe sensed signal pulses; and

(f) generating an instrument control command in response to detecting said pattern of stimulus probe sensed signal pulses.

20. The method for controlling a neurophysiological monitoring instrument connected to a stimulus probe of claim 19, wherein said instrument control command changes the instrument display mode.

21. The method for controlling a neurophysiological monitoring instrument connected to a stimulus probe of claim 19, wherein said instrument control command changes the instrument stimulus signal amplitude.

22. The method for controlling a neurophysiological monitoring instrument connected to a stimulus probe of claim 19, wherein said instrument control command changes the instrument stimulus signal frequency.

23. The method for controlling a neurophysiological monitoring instrument connected to a stimulus probe of claim 19, wherein said instrument control command begins generation of a predefined pattern of stimulus signal pulses.

24. The method for controlling a neurophysiological monitoring instrument connected to a stimulus probe of claim 19, wherein said instrument control command changes the instrument audible annunciation mode, enabling generation of audible tones.

25. The method for controlling a neurophysiological monitoring instrument connected to a stimulus probe of claim 19, wherein said instrument control command changes the instrument audible annunciation mode, disabling generation of audible tones.

26. The method for controlling a neurophysiological monitoring instrument connected to a stimulus probe of claim 19, wherein said instrument control command causes a command represented by an icon on the instrument display screen to be executed.

27. An artifact detection electrode for sensing neurophysiological signal artifacts in tissue structures, in the body, comprising:

a first electrode needle having an insulated proximal portion and a sharp, uninsulated distal portion;

a second electrode needle having an insulated proximal portion and a sharp, uninsulated distal portion;

a first elongate conductor having a proximal end, an intermediate portion and a distal end;

said first elongate conductor being electrically connected to said first electrode needle proximal portion at said first conductor distal end;

said second elongate conductor being electrically connected to said second electrode needle proximal portion at said second conductor distal end;

said first elongate conductor having a circuit element connected in series therewith; and

said first conductor intermediate segment and said second conductor intermediate portion being configured in a loop to define a recording field signal receiving antenna.

28. The artifact detection electrode for sensing neurophysiological signal artifacts of claim 27, said first elongate conductor having said circuit element connected in series in said first elongate conductor intermediate segment.

29. The artifact detection electrode for sensing neurophysiological signal artifacts of claim 27, said first elongate conductor having said circuit element connected in series and disposed in a connector body affixed to said proximal end of said first elongate conductor.

30. The artifact detection electrode for sensing neurophysiological signal artifacts of claim 27, said resistive circuit element being a fixed value resistor.

31. The artifact detection electrode for sensing neurophysiological signal artifacts of claim 27, said resistive circuit element being a variable resistance potentiometer.

32. The artifact detection electrode for sensing neurophysiological signal artifacts of claim 31, said variable resistance potentiometer having an adjustment range of from zero ohms to approximately fifty thousand ohms.